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LE, LANA N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/400,974	Applicant(s) SATO ET AL.	
	Examiner Lana N. Le	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 14 November 2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-48 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-48 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-11, 14-23, 28-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fortune et al (US 5,450,615) in view of Hayashikura et al (US 5,654,715) and further in view of Katz (US 6,643,526).

Regarding claim 1, Fortune et al discloses a signal transmitting/receiving system (fig. 2 and hereafter), comprising:

a stationary transmitter positioned at 210 transmitting a signal wave (fig. 2);

a propagation path forming portion forming at least one indirect propagation path 219 from 210 towards floor 216 and to the receiver 212 for propagation of the RF band signal wave;

a stationary receiver at 212 including a receive antenna 215 receiving the signal wave a plurality of the signal waves from a plurality of propagation paths including a line of sight propagation path 217 and the at least one indirect propagation path 219, and

receiving the signal wave from at least one of the plurality of propagation paths (col 5, line 43 – col 6, line 67), and that different types of antennas can be used to calculate propagation path loss (col 6, lines 52-56); and different types of antennas can be used to calculate path losses (col 6, lines 52-56).

Fortune et al didn't specifically disclose a millimeter band signal transmitting/ receiving system, and a millimeter band propagation signal, transmitting and receiving a millimeter band signal wave and the receive antenna having a main lobe and a side lobe. Hayashikura et al discloses a millimeter band signal transmitting/receiving system, and a millimeter band propagation signal transmitting and receiving a millimeter band signal wave (col 2, lines 7-18; col 3, lines 60-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to comprise the indoor, in-building high frequency band signal of Fortune et al with the millimeter band signal in order to fully utilize the continuous spectrum by broadening the intended use of the signal wave for commercial purposes merely by using an alternative frequency in a higher frequency band than usual depending on the available spectrum resource of the system.

Fortune et al and Hayashikura et al do not explicitly teach a main lobe and a side lobe in an antenna for receiving the millimeter wave simultaneously. However, it is notoriously well known in the art that a main lobe and a side lobe is part of a conventional directional antenna as taught by Katz. Katz discloses a main lobe and a side lobe in the antenna for receiving the millimeter wave simultaneously (col 8, lines 28-41). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to have a main lobe and a side lobe in order to simultaneously receive multipath millimeter signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe simultaneously since a signal is unlikely to come from just a single beam direction due to multipath effect as suggested by Katz as suggested by Katz (col 8, lines 28-41).

Regarding claim 2, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, wherein Fortune et al further discloses the propagation path forming portion includes a reflector 216 arranged to reflect the signal wave transmitted from the transmitter and direct the reflected signal wave to the receiver 212 (fig. 2).

Regarding claim 3, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting /receiving system according to claim 2, wherein Fortune et al further discloses the reflector 216 is arranged substantially almost in parallel to a line of sight 217 between the transmitter and the receiver (fig 2).

Regarding claim 4, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 2, wherein Fortune et al further discloses the reflector has thin film including aluminum (col 1, lines 41; col 4, line 38).

Regarding claim 5, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 2, wherein Fortune et al further discloses the reflector has a surface covered by an insulating material (col 1, line 41; col 4, line 38-39).

Regarding claim 6, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 2, wherein Fortune et al further discloses the reflector has a surface covered by a transparent insulating material (col 1, line 41; col 4, lines 38-39).

Regarding claim 7, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 2, wherein Fortune et al further disclose a plurality of the reflectors (col 5, lines 3-5; col 3, lines 33-35) are arranged to form the plurality of propagation paths for propagating the signal waves to the receiver.

Regarding claim 8, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, wherein Katz further discloses the receiver always simultaneously receives the plurality of signal waves from the plurality of propagation paths in a normal state (col 8, lines 7-41).

Regarding claim 9, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, wherein Fortune et al further discloses the receiver and the transmitter are provided inside a house 102, the propagation path includes a structural component 216 defining an internal space of the house 102 and reflecting a signal wave transmitted from the transmitter at 210, and the transmitter is spaced by a prescribed distance from the structural component defining the internal space of the house for transmitting the signal wave with the at a prescribed transmission angle (fig. 2; col 6, lines 6-52).

Regarding claim 10, Fortune et al and Hayashikura et al further disclose the millimeter band signal transmitting/receiving system according to claim 9, wherein Fortune et al further discloses each of the prescribed distance and the prescribed transmission angle is determined depending on a region for propagation of the plurality of signal waves and a positional relationship between the transmitter and the receiver (col 6, line 63-66; col 7, line 8-40).

Regarding claim 11, Fortune et al disclose a signal transmitting/receiving system, comprising a plurality of stationary transmitters (col 6, lines 63-67) which is set up at the transmitter point 210 and a stationary receiver at 212 including a receive antenna 215 (col 5, lines 1-2) at receiver point 212 arranged to receive a plurality of signal waves output from the plurality of transmitters (col 6, lines 48-53), the plurality of signal waves transmitted from the plurality of transmitters having a same frequency due to the same path length from the transmitter point 210 (col 6, lines 63-67; col 5, lines 45-53), and that different antennas can be used to calculate propagation path loss (col 6, lines 52-56).

Fortune et al didn't specifically disclose a millimeter band signal transmitting/receiving system transmitting and receiving a plurality of millimeter band signal waves, and the receive antenna having a main lobe and a side lobe for receiving the millimeter wave simultaneously. Hayashikura et al discloses a millimeter band signal transmitting/receiving system transmitting and receiving a plurality of millimeter band signal waves (col 2, lines 7-18; col 3, lines 60-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the indoor high

frequency band of Fortune et al the millimeter band of Hayashikura et al in order to obtain microwave and above frequencies in the same continuous wireless radio frequency spectrum for more practical applications, i.e. local multipoint distribution services in the indoor environment of Fortune et al, which serves as intended commercial use purposes.

Fortune et al and Hayashikura et al do not explicitly teach a main lobe and a side lobe in an antenna for receiving the millimeter wave simultaneously. However, it is notoriously old and well known in the art that a main lobe and a side lobe is part of a conventional directional antenna for receiving the millimeter wave simultaneously as taught by Katz. Katz discloses a main lobe and a side lobe in the receive antenna for receiving the millimeter wave simultaneously (col 8, lines 28-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe and a side lobe in order to receive multipath millimeter signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe simultaneously since a signal is unlikely to come from just a single beam direction due to multipath effect as suggested by Katz (col 8, lines 28-41).

Regarding claim 14, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 11, wherein Katz further discloses the receiver always simultaneously receives the plurality of signal waves in a normal state due to normal multipath effects (col 8, lines 7-41).

Regarding claim 15, Fortune et al disclose a house 102 (fig. 2) provided with a signal transmitting/receiving system, comprising a structural component (216) defining an internal space and an indoor signal transmitting/receiving system,

wherein the signal transmitting/receiving system includes a stationary transmitter located at 210 transmitting a signal wave; a propagation path forming portion arranged in the structural component for forming at least one indirect propagation path for propagation of the signal wave (col 6, lines 6-7);

a stationary receiver at 212 (fig. 2) receiving the signal wave through a plurality of propagation paths including a line of sight propagation path (217) to and the at least indirect one propagation path 219 (col 5, line 43 – col 6, line 56); and different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al don't specifically disclose a millimeter band signal transmitting/receiving system, and a transmitter and receiver for transmitting and receiving a millimeter band signal wave, and the receive antenna having a main lobe and a side lobe for receiving the millimeter wave simultaneously. Hayashikura et al disclose a millimeter band signal transmitting/receiving system, and a transmitter and receiver for transmitting and receiving a millimeter band signal wave (col 2, lines 7-18; col 3, lines 60-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the indoor radio frequency propagation signal of Fortune et al the high frequency millimeter band signal in order to fully utilize the continuous radio frequency spectrum to include higher microwave frequencies that has more industrial applicability to practical commercial purposes with the advantage of small output power and

measuring of signals for reflective and radiation loss as in Fortune et al (col 6, lines 21-56).

Fortune et al and Hayashikura et al do not explicitly teach a main lobe and a side lobe in an antenna for receiving the millimeter wave simultaneously. However, it is notoriously old and well known in the art that a main lobe and a side lobe for receiving the millimeter wave simultaneously is part of a conventional directional antenna as taught by Katz. Katz discloses a main lobe and a side lobe in the antenna for receiving the millimeter wave simultaneously (col 8, lines 28-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe and a side lobe in order to receive millimeter multipath signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe simultaneously since a signal is unlikely to come from just a single beam direction due to multipath effect as suggested by Katz (col 8, lines 28-41).

Regarding claim 16, Fortune et al, Hayashikura et al, and Katz disclose a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein Fortune et al disclose the propagation path forming portion has a reflector 216 reflecting an output from the transmitter and the reflector is arranged on a surface of the component (fig. 2; col 5, lines 3-35).

Regarding claim 17, Fortune et al, Hayashikura et al, and Katz disclose a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein Fortune et al disclose the propagation path forming portion has a reflector

216 reflecting an output from the transmitter at transmitter point 210 and the reflector is arranged inside the component (col 5, lines 19-21).

Regarding claim 18, Fortune et al disclose a radio frequency signal transmitting/receiving system, comprising:

at least one stationary transmitter (at 210) transmitting an indoor signal through an associated transmit antenna 211 (col 4, line 60-68) along a plurality of propagation paths 217, 219 of the signal formed by the associated transmit antenna including a line of sight propagation path between the associated transmit antenna and a receive antenna 215 (col 6, lines 47-52); a receiver at 212 receiving the signal through the receive antenna (col 5, line 1-2);

wherein, in a normal state when the line of sight propagation path 217 is unobstructed when it does not pass through a surface (col 5, lines 43-48), the receiver receives the signal through each of the plurality of propagation paths including the line of sight propagation path (col 6, lines 62-63; fig. 2);

wherein, in an obstructed state when the line of sight propagation path is obstructed, the receiver receives the signal through each of the plurality of propagation paths except the line of sight propagation path (col 5, lines 57 – col 6, line 7); and

different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al don't specifically disclose a millimeter band transmitting/receiving system; the transmitter transmitting a millimeter band signal; and the receiver receiving a millimeter signal and the receive antenna having a main lobe and a side lobe. Hayashikura et al disclose a millimeter band transmitting/receiving system; a transmitter

transmitting a millimeter band signal; and a receiver receiving a reflected millimeter signal (col 3, lines 55-67; col 2, lines 7-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the indoor radio frequency propagation signal of Fortune et al the high frequency millimeter band signal in order to fully utilize the continuous radio frequency spectrum to include higher microwave frequencies that has more industrial applicability to practical commercial purposes with the advantage of small output power and measuring of signals for reflective and radiation loss as in Fortune et al (col 6, lines 52-56).

Fortune et al and Hayashikura et al do not explicitly teach a main lobe and a side lobe in an antenna. However, it is notoriously old and well known in the art that a main lobe and a side lobe is part of a conventional directional antenna as taught by Katz.

Katz discloses a main lobe and a side lobe in the antenna (col 8, lines 28-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe and a side lobe in order to receive the multipath millimeter signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe since a signal is unlikely to come from just a single beam direction due to multipath effect as suggested by Katz (col 8, lines 28-41).

Regarding claim 19, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 18, wherein Fortune et al disclose at least a portion of the plurality of propagation paths are formed by at least one reflector 216 (fig. 2).

Regarding claim 20, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 19, wherein Fortune et al further disclose the at least one reflector 216 has a surface arranged substantially parallel to the direct path 217 (fig. 2).

Regarding claim 21, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 19, wherein Fortune et al further discloses the at least one reflector includes two reflectors (col 6, lines 8-11).

Regarding claim 22, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 21, wherein Fortune et al further discloses at least one of the plurality of propagation paths of the signal is formed by reflection from each of the two reflectors (col 6, lines 8-11).

Regarding claim 23, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 18, wherein Fortune et al further discloses the at least one transmitter is a single transmitter (col 6, line 67-68).

Regarding claim 28, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 18, wherein Fortune et al disclose different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al and Hayashikura et al don't specifically disclose the line of sight propagation path between the associated transmit antenna and the receive antenna is formed in a side lobe of the associated transmit antenna. However, it is notoriously old and well known in the art that a side lobe is part of a conventional directional antenna as taught by Katz. Katz discloses a main lobe and a side lobe in the antenna (col 7, line 56

– col 8, line 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe and a side lobe in order to transmit and receive via the same antenna the few direct signals of the multipath signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe to lessen the congestion and interference in the side lobes having to receive indirect signals as well due to multipath effect as suggested by Katz (col 8, lines 28-41).

Regarding claim 29, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 18, wherein Fortune et al disclose different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al and Hayashikura et al do not specifically disclose the plurality of propagation paths of the signal except the line of sight propagation path are formed in a main lobe of the associated transmit antenna. However, it is notoriously well known in the art that a main lobe and a side lobe is part of a conventional directional antenna to transmit any type of signal as taught by Katz. Katz discloses the plurality of propagation paths of the signal except the line of sight propagation path are formed in a main lobe of the associated transmit antenna (col 7, line 56 – col 8, line 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe in the transmit antenna in order to transmit most of the indirect millimeter signals of the modified system of Fortune et al and Hayashikura et al in the main lobe and leaving the side lobes for the remaining direct signal as suggested by Katz to

isolate the direct path signal from interference to increase signal level reception in the direct path from the indirect signals caused by multipath effects (col 8, lines 7-41).

Regarding claim 30, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 18, wherein Fortune et al further disclose a portion of the plurality of propagation paths are formed by interaction with a structural component 216 of a building 102 (fig. 2).

Regarding claim 31, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 18, wherein Fortune et al further disclose the receive antenna is a single receive antenna 215 (fig. 2).

Regarding claim 32, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 18, wherein Katz discloses the receiver simultaneously receives the signal through each of an unobstructed direct plurality of propagation paths 217 (col 8, lines 7-41).

Regarding claim 33, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 1, wherein Fortune et al discloses the receiver 212 receives the signal wave through the line of sight propagation path 217 when the line of sight propagation path is not blocked when it does not pass through a surface (col 5, lines 45-48).

Regarding claim 34, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 1, wherein al Fortune et al further disclose the receiver receives the signal wave only through the at least one

indirect path when the line of sight propagation path is blocked (col 5, lines 64 – col 6, line 7).

Regarding claim 35, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 11, wherein Fortune et al further disclose the receiver 212 receives one of the plurality of signal waves through at least one line of sight propagation path 217 between at least one of the plurality of transmitters and the receiver (col 6, lines 39-67; fig. 2).

Regarding claim 36, Fortune et al, Hayashikura et al, and Katz disclose the house provided with a millimeter band signal transmitting/receiving system of claim 15, wherein Fortune et al disclose the receiver at receiver point 212 receives one of the plurality of signal waves through the line of sight 217 propagation path when the line of sight propagation path is not blocked (col 5, lines 62-63).

Regarding claim 37, Fortune et al and Hayashikura et al further disclose the millimeter band signal transmitting/receiving system of claim 15, wherein Fortune et al further disclose the receiver only receives the plurality of signal waves through the at least one indirect propagation path from when the line of sight propagation path is blocked (col 5, lines 64-65; col 6, lines 6-7).

Regarding claim 38, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 1, wherein Fortune et al disclose wherein different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al and Hayashikura et al do not specifically disclose the at least one indirect propagation path is formed in a main lobe of a transmit antenna.

However, it is notoriously well known in the art that a main lobe and a side lobe is part of a conventional directional antenna to transmit any type of signal as taught by Katz. Katz discloses wherein the at least one indirect propagation path is formed main lobe of a transmit antenna (col 7, line 56 – col 8, line 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a main lobe in the transmit antenna in order to transmit most of the multipath indirect signals of the modified system of Fortune et al and Hayashikura et al in the main lobe and leaving the side lobes for the remaining fewer direct signals to have good signal reception in the direct signal as suggested by Katz (col 8, lines 7-41).

Regarding claim 39, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 1, wherein Fortune et al and Hayashikura et al do not specifically disclose the line of sight propagation path is formed in a side lobe of the associated transmit antenna. However, it is notoriously old and well known in the art that a side lobe is part of a conventional directional antenna as taught Katz. Katz discloses a line of sight propagation path is formed in a side lobe of a transmit antenna (col 7, line 56 – col 8, line 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a side lobe in the transmit antenna in order to receive the direct signal of the multipath signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe to lessen the congestion and interference in the side lobe not having to receive indirect signals due to multipath effect as suggested by Katz (col 8, lines 7-41).

Regarding claim 40, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system of claim 15, wherein Fortune et al disclose different types of antennas can be used to calculate path losses (col 6, lines 52-56). Fortune et al and Hayashikura et al do not specifically disclose the line of sight propagation path is formed in a side lobe of a transmit antenna. However, it is notoriously old and well known in the art that a side lobe is part of a conventional directional antenna as taught Katz. Katz discloses a line of sight propagation path is formed in a side lobe of a transmit antenna (col 7, line 56 – col 8, line 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a side lobe in the transmit antenna in order to receive the direct signal of the multipath signals of the modified system of Fortune et al and Hayashikura et al from other lobes other than the one main beam lobe to lessen the congestion and interference in the side lobe not having to receive indirect multipath signals due to multipath effect as suggested by Katz (col 8, lines 7-41).

2. Claims 12-13, 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fortune et al (US 5,450,615) in view of Hayashikura et al (5,654,715) in view of Katz (US 6,643,526) and further in view of Kagami et al (US 5,479,443).

Regarding claim 12, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 11, wherein they didn't further disclose wherein each of the plurality of transmitters includes a local oscillator oscillating at a prescribed local oscillator frequency for generating the signal wave at the same frequency. Kagami further discloses wherein each of the plurality of

transmitters includes a local oscillator oscillating at a prescribed local oscillator frequency for generating the signal wave at the same frequency (col 9, lines 25-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made for two transmitters to have a common frequency via a common local oscillator in order to convert the reference frequency to the desired frequency band signal.

Regarding claim 13, Fortune et al, Hayashikura et al, and Kagami et al disclose the millimeter band signal transmitting/receiving system according to claim 12, wherein Kagami further discloses the local oscillators are in synchronization with each other.

Regarding claim 24, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 18, Fortune et al and Hayashikura et al didn't further disclose wherein the at least one transmitter includes two transmitters and two associated transmit antennas, wherein each of the two associated transmit antennas provides a separate line of sight propagation path to the receive antenna. Kagami et al further discloses wherein the at least one transmitter includes two transmitters and two associated transmit antennas, wherein each of the two associated transmit antennas provides a separate line of sight propagation path to the receive antenna (col 9, lines 37-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the one transmitter includes two transmitters in order to assure that the signal can be transmitted via diversity transmission.

Regarding claim 25, Fortune et al, Hayashikura et al, Katz, and Kagami et al disclose the millimeter band signal transmitting/receiving system of claim 24, wherein

Kagami further discloses the two transmitters are further synchronized with each other (col 9, lines 37-48).

Regarding claim 26, Fortune et al, Hayashikura et al, Katz and Kagami et al disclose the millimeter band signal transmitting/ receiving system of claim 25, wherein Kagami et al further discloses the two transmitters share a common local oscillator (col 9, lines 37-48).

3. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fortune et al in view of Hayashikura et al (US 5,654,715) and Katz (US 6,643,526) as applied to claim 18 above, and further in view of Evans et al (US 5,920,813).

Regarding claim 27, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/ receiving system of claim 18, wherein they didn't further disclose the signal is a video signal. Evans et al further discloses the signal is a video signal (col 4, lines 65- col 5, line 2; col 8, lines 13-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the video signals to the system of Fortune et al and Hayashikura et al in order to apply the higher microwave frequencies to practical use.

4. Claims 41-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fortune et al, Hayashikura et al, and Katz as applied to claims 1 and 15 above, and further in view of Bae et al (US 6,249,321).

Regarding claim 41, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, wherein Fortune et al, Hayashikura et al, and Katz do not disclose the intensity of the signal

wave received from the indirect propagation path is substantially the same as the intensity of the signal wave received from the line of sight propagation path. Bae et al disclose the intensity of the signal wave received from the indirect propagation path is substantially the same as the intensity of the signal wave received from the line of sight propagation path (intensity of indirect signal with direct signal is compared via attenuation constant of the ghost depending on different conditions from which the multipath signals are received) (col 1, lines 15-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the multipath effect of Fortune et al, Hayashikura et al and Katz have the same signal intensity based on the time broadcasting environment and broadcasting channel as suggested by Bae et al (col 1, lines 49-55).

Regarding claim 42, Fortune et al, Hayashikura et al, Katz, and Bae et al disclose the millimeter band signal transmitting/receiving system according to claim 41, wherein Bae et al disclose the intensity of the signal wave received from the indirect propagation path is at least 3dB greater than the intensity of the signal wave received from the line of sight propagation path (intensity of indirect signal with direct signal is compared via attenuation constant of the ghost depending on different conditions from which the multipath signals are received) (col 1, lines 15-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made for the indirect signal of the modified system of Fortune et al, Hayashikura et al and Katz have signal intensity due to time, broadcasting environment (i.e. reflection characteristic of reflecting bodies

based on environment) and broadcasting channel as suggested by Bae et al (col 1, lines 49-55).

Regarding claim 43, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, wherein Fortune et al, Hayashikura et al, and Katz do not disclose said stationary receiver receives a millimeter band signal wave having a carrier to noise ratio of at least 8dB when said line of sight propagation path signal wave is interrupted. Bae et al disclose a stationary receiver receives intensity of the indirect path with respect to the direct signal on the main path in which any signal could be distorted based on different conditions from which the multipath signals are received (col 1, lines 15-55). Bae et al do not specifically disclose the stationary receiver receives carrier to noise ratio of at least 8dB when said line of sight propagation path signal wave is interrupted. However, it is well known in the art that determining carrier to noise ratio result from measuring signal intensity of the indirect signal path and comparing it with the main signal path, which may or may not be received based on the broadcasting channel and broadcasting environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the carrier to noise ratio in order to determine how much distortion there is in the indirect path with respect to the main path as suggested by Bae et al (col 1, lines 20-55).

Regarding claim 44, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 15, wherein Fortune et al, Hayashikura et al, and Katz do not disclose the intensity of the signal

wave received from the at least one indirect propagation path is substantially the same as the intensity of the signal wave received from the line of sight propagation path (intensity of indirect signal with direct signal is compared via attenuation constant of the ghost depending on different conditions from which the multipath signals are received) (col 1, lines 15-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the multipath effect of Fortune et al, Hayashikura et al and Katz have the same signal intensity based on the time, broadcasting environment and broadcasting channel as suggested by Bae et al (col 1, lines 49-55).

Regarding claim 45, Fortune et al, Hayashikura et al, and Katz, and Bae disclose the millimeter band signal transmitting/receiving system according to claim 44, wherein Bae et al disclose the intensity of the signal wave received from the at least one indirect propagation path is at least 3dB greater than the intensity of the signal wave received from the line of sight propagation path (intensity of indirect signal with direct signal is compared via attenuation constant of the ghost) (col 1, lines 15-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the multipath effect of Fortune et al, Hayashikura et al and Katz have the same signal intensity based on the time broadcasting environment and broadcasting channel as suggested by Bae et al (col 1, lines 49-55).

Regarding claim 46, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 15, wherein Fortune et al, Hayashikura et al, and Katz do not disclose said stationary receiver receives carrier to noise ratio of at least 8dB when said line of sight propagation path

signal wave is a millimeter band signal wave is interrupted. Bae et al disclose a stationary receiver receives intensity of the indirect path with respect to signal on the main path in which any signal could be distorted depending on different conditions from which the multipath signals are received (col 1, lines 15-55). Bae et al do not specifically disclose the stationary receiver receives a millimeter band signal having carrier to noise ratio of at least 8dB when said line of sight propagation path signal wave is wave is interrupted. However, it is well known in the art that determining carrier to noise ratio result from measuring signal intensity of the indirect signal path and comparing it with the main signal path, which may or may not be received based on the broadcasting channel and broadcasting environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the carrier to noise ratio in order to determine how much distortion the indirect path has with respect to the direct path as suggested by Bae et al (col 1, lines 20-55).

Regarding claim 47, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 1, where Fortune et al, Hayashikura et al, and Katz do not disclose wherein when the millimeter band signal wave is received from the plurality of propagation paths, the line of sight propagation path and the at least one propagation path are received substantially without adverse effects caused by multiple paths. Bae et al disclose the intensity of the line of sight propagation path and the at least one propagation path are received with/without adverse effects caused by multiple paths based on the current conditions of the broadcasting environment and broadcasting channel (col 1, lines 15-55). Therefore,

it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the signals be received without adverse effects when the current conditions of the current conditions of the broadcasting environment and broadcasting channel are good and do not cause ghost generation as suggested by Bae et al (col 1, lines 49-55).

Regarding claim 48, Fortune et al, Hayashikura et al, and Katz disclose the millimeter band signal transmitting/receiving system according to claim 15, where Fortune et al, Hayashikura et al, and Katz do not disclose wherein when the millimeter band signal wave is received from the plurality of propagation paths, the line of sight propagation path and the at least one propagation path are received substantially without adverse effects caused by multiple paths. Bae et al disclose the intensity of the line of sight propagation path and the at least one propagation path are received with/without adverse effects caused by multiple paths based on the current conditions of the broadcasting environment and broadcasting channel (col 1, lines 15-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the signals be received without adverse effects when the current conditions of the current conditions of the broadcasting environment and broadcasting channel are good and do not cause ghost generation as suggested by Bae et al (col 1, lines 49-55).

Response to Arguments

4. Applicant's arguments with respect to claims 1-48 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Lana Le

Lana N. Le
01-21-06

LANA LE
PRIMARY EXAMINER